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STOMACH WORMS IN CALVES.

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The most serious worm parasite affecting calves in Porto Rico is the stomach worm (Haemonchus contortus). In some localities this parasite is the principal reason that many farmers are unable to raise calves.

Location.--The parasites are found in the fourth stomach or abomasum. The fourth stomach is the one to which the upper end of the small intestine attaches.

Appearance.--The parasites may be seen in a freshly opened stomach as a wriggling, red hair-like worm about 1 inch in length.

Life History.--The eggs produced by the female worm pass out in the manure and hatch in a few hours or several days or weeks, depending on the moisture and temperature. The embryo which develops from the egg, finally becomes an ensheathed infective larva which is very resistant and can exist over a long period under unfavorable conditions. A field or pasture may carry infection for one year. The egg and the first stages of the embryo are easily destroyed by drying and by the direct rays of the sun. When the grass is wet with rain or dew, the infective larvae crawl up the blades. Here they are swallowed by the animals as they graze. The same happens when grass which had been fertilized with manure containing the eggs is cut and fed. The parasites also spread in pens which are not kept clean.

The larvae in the stomach develop into mature worms and begin producing eggs in large numbers in about one month. Calves may show the first signs of this disease about 3 or 4 weeks after they have started eating grass.

Distribution.--The stomach worm is one of the most common and widespread parasites in Porto Rico. This climate is very favorable for its development. In the dry sections of the island it is found along the valleys of streams and rivers and near the lagoons.

Symptoms and Lesions.--The first symptoms of infection are dullness and lack of thrift. Diarrhea may be present. Later, anemia and edema are characteristic of the disease. The anemia is manifested in the paleness of the skin and of the linings of the mouth and eyelids. The edema is manifested as a swelling of the pendent portions of the body especially underneath the jaw. Calves may become emaciated and finally die or they may become stunted or weakened so that they are very susceptible to bacterial diseases. Thus calves may die of diarrhea, pneumonia, peritonitis, etc., which might have survived if these parasites had not been present. Growth must be made in youth and growth which is not made in this period cannot be made up in adult life. Parasites and disease interfere seriously with growth.

Close investigation of the lining of an infested stomach will reveal the pin-point punctures caused by the bites of the worms. There are usually a number of these for every worm, as the worm has the habit of attaching at one point for a time and then moving away and attaching at another point, leaving the old point of attachment bleeding for some time.

Susceptibility.--This worm is common in young calves up to one year of age. Soon after this age the animal usually is more resistant to attack and to serious damage from it. Occasionally an older animal may be heavily infested and it is not uncommon to find a few worms in adults. Very old animals acquire an increased susceptibility to infection. However, this parasite is most serious in calves from 2 months to 1 year of age.

The native goats, both young and old, are very susceptible to stomach-worm infection and unless treatment has been given are usually heavily infested.

Prevention.--Pasture rotation is not practical in Porto Rico. Calves should be kept in sanitary pens until 9 months to 1 year of age. The pens should be cleaned daily. The manure from infested animals should not be spread on land used for forage for young calves unless it is plowed under. Goats should be considered dangerous as a source of infection.

Treatment.--A satisfactory treatment for this parasite is the use of a 1-per-cent solution of copper sulphate in water. To make a 1-per-cent solution, dissolve 1 ounce of copper sulphate in 3 quarts of water or in this proportion. The dose of this solution varies from 3 ounces for a calf 2 months of age up to 6 or 8 ounces for a yearling, depending on size. Porcelain, glass or enamel-ware receptacles should be used, as copper sulphate will corrode metals. Before giving the solution, food and water should be withheld at least 18 hours before and 3 hours after administration. The solution may be given as a drench from a long-necked bottle. The calf should remain on all four legs with the head held horizontally while it is being drenched, which decreases the danger of getting the drench into the lungs and killing the calf. Giving the solution once each month throughout the year is the best control measure.

If the owner suspects that his calves may be infested with the stomach worm, he may send samples of manure to this station for examination. An examination of the feces not only indicates whether or not this parasite is present but also the degree or seriousness of the infestation.

Fecal material to fill a 2-ounce bottle is sufficient. This must be fresh material, and, if it cannot reach the laboratory the same day, a 10-per-cent solution of formalin should be added to preserve the ova and prevent the development of the embryos or larvae.

The Station wishes to inform the public that examinations will be made by the parasitologist not only for this parasite but for any other in any kind of live stock, and that such examinations are made without charge.